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COMING TOTAL ECLIPSES OF THE SUN.

A total eclipse of the Sun will occur on January 13, 1907. It will begin at sunrise at a point about midway between Moscow and the north end of the Caspian Sea. The shadow will pass over the northern end of the Caspian Sea, the southern end of the Aral Sea, midway between the cities of Samarkand and Taschkent, over eastern Turkestan, Mongolia, near the boundary between Transbaikal and Manchuria, and end at sunset on the mainland northwest of Saghalin. It would seem that the only location worth considering for an observing-station would be in the Samarkand-Taschkent region, longitude 68° E., latitude 40° N., where the duration of totality would be two minutes. The difficulties of transport for observers, instruments, and supplies would be practically prohibitive, especially in the middle of the winter season. The Lick Observatory will not send an expedition to observe this eclipse.

A total eclipse of the Sun will occur on January 3, 1908. Its path will cross the central Pacific Ocean, from west to east. The total phase begins at sunrise at longitude 155° E. and latitude 11° N. At local noon the shadow will be at 145° W., 12° S. The total phase will end at sunset at 85° E., 10° N., near Punta Arenas, Costa Rica, Central America. The shadow does not pass over any islands of considerable extent, but it is probable that several quite small islands lie within its borders, especially along the western half of the path. From Hydrographic Office Chart No. 1980 and other information kindly supplied at my request by Superintendent O. H. TITTMANN, of the U. S. Coast and Geodetic Survey, it appears that Flint Island is well situated.

"Flint Island (British), discovered in 1801, lies in latitude $11^{\circ} 26'$ S., longitude $151^{\circ} 48'$ W., is 13 feet high, covered with brushwood and trees, and is visible from the masthead from a distance of 16 miles. It is about $2\frac{1}{2}$ miles long N. N. W. and S. S. E., half a mile wide, and is fringed by a steep coral reef, which dries at low water, and extends seaward generally about half a cable, but off the northern end of the island it extends seaward $4\frac{1}{2}$ cables and off the southern end E. S. S. $2\frac{1}{2}$ cables. In the interior are two small lagoons of brackish water. . . . There is little or no rise and fall of tide at Flint Island. The landing is very bad even for surfboats, but it is said to export nearly 200 tons of copra annually."—Extract from Superintendent Tittmann's letter.

For this longitude, $151^{\circ} 48'$ W., the corresponding latitude of the center of the eclipse path is $11^{\circ} 17'$ S. The island thus appears to be within ten miles of the central line. As the shadow-path will be about ninety-three miles wide, this location would be comparatively close to the center. It is not probable that the assigned latitude is seriously in error. Any possible error in the assigned longitude would hardly be serious, for the shadow will travel nearly east and west. The motion in longitude will be six times that in latitude.

The duration of totality at Flint Island, from American Ephemeris data, would be $4^{\text{m}} 0^{\text{s}}$.

The next total eclipse of the Sun observable in the United States will take place on June 8, 1918. It will pass from the northwest coast of Washington to Florida during the latter half of the summer afternoon.

Another total eclipse, occurring on September 10, 1923, will enter the coast of California at latitude about 36° in the early afternoon, and will pass over the Gulf of Mexico and southwestern Cuba.

W. W. CAMPBELL.

NOTE ON COMET *c* 1905 (GIACOBINI).

The third comet of the year 1905 was discovered December 6th by GIACOBINI at Nice. At the time of discovery it was 21° north of the equator in Right Ascension $14^{\text{h}} 22^{\text{m}}$. Since then it has been traveling southeasterly toward the Sun. Its closest approach to the Sun will be on the 22d of this month, when it will be within twenty million miles of that body. Its closest approach to the Earth was on the 6th of January, when it was distant about one hundred million miles. The plane of its orbit is inclined 43° to the plane of the ecliptic. The orbit is parabolic.

Because of the very near approach to the Sun this comet becomes very bright at the end of January. At the present date it is visible to the unaided eye a few moments before sunrise. It will pass the Sun and become an evening object on the 23d inst. By the 28th it will set about half an hour after the Sun, and will be 7° south of it. On this date it should be easily seen with the unaided eye, when it will be thirty times brighter than at discovery. After the first of February its brightness will diminish rapidly.